August 15, 2003

MEMORANDUM TO: Janet R. Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

FROM: Robert M. Latta, Sr. On-Site Licensing Representative **/RA/**
Repository Site Section
Division of Waste Management
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Repository Site Section
Division of Waste Management
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and Safeguards

SUBJECT U.S. NUCLEAR REGULATORY COMMISSION ON-SITE LICENSING REPRESENTATIVES' REPORT ON YUCCA MOUNTAIN PROJECT FOR MAY 1, 2003, THROUGH JUNE 30, 2003

The purpose of this memorandum is to transmit the U.S. Nuclear Regulatory Commission (NRC) On-Site Representatives' (ORs) report for the period of May 1, 2003, through June 30, 2003.

This report highlights a number of Yucca Mountain Project activities of potential interest to NRC staff. The ORs continue to respond to requests from NRC Headquarters staff to provide various documentation and feedback related to Key Technical Issues (KTIs) and their resolution. During this reporting period, the ORs continued to observe activities associated with Yucca Mountain site activities, KTIs, and audits. The ORs also attended various meetings and accompanied NRC staff on visits to Yucca Mountain.

If you have any questions on this report or its attachments, please call Robert Latta on (702) 794-5048, or Jack Parrott on (702) 794-5047.

Attachment(s): 1. U.S. Nuclear Regulatory Commission On-Site Licensing Representatives' Report, Number OR-03-02 for the Reporting Period of May 1, 2003 Through May 30, 2003
2. Figure 1: ESF/ECRB Plan View Alcove, Niche and Borehole Testing Locations
3. Table 1: U.S. NRC On-Site Licensing Representatives' Tracking Report for Open Items
4. Table 2: Current Test Activities by Scientific Investigation Test Plan

cc: See attached list

Memorandum to Janet R. Schlueter, Chief, dated: August 15, 2003
cc:

A. Kalt, Churchill County, NV
R. Massey, Churchill/Lander County, NV
I. Navis, Clark County, NV
E. von Tiesenhausen, Clark County, NV
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L. Fiorenzi, Eureka County, NV
A. Johnson, Eureka County, NV
A. Remus, Inyo County, CA
M. Yarbro, Lander County, NV
S. Hafen, Lincoln County, NV
M. Baughman, Lincoln County, NV
L. Mathias, Mineral County, NV
L. Bradshaw, Nye County, NV
D. Chavez, Nye County, NV
D. Hammermeister, Nye County, NV
J. Larson, White Pine County, NV
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D. Beckman, BSC/B&A
W. Briggs, Ross, Dixon & Bell
P. Johnson, Citizen Alert
R. Holden, NCAI
B. Helmer, Timbisha Shoshone Tribe
R. Arnold, Pahrump Paiute Tribe
G. Hernandez, Las Vegas Paiute Tribe
R. Boland, Timbisha Shoshone Tribe

cc: (Continued)

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K. Finfrock, NV Congressional Delegation

R. Anderson, NEI

R. McCullum, NEI

S. Kraft, NEI

J. Kessler, EPRI

D. Duncan, USGS

R. Craig, USGS

W. Booth, Engineering Svcs, LTD

E. Opelski, NQS

L. Lehman, T-REG, Inc.

S. Echols, ECG

J. Bacoch, Big Pine Paiute Tribe of the Owens Valley

P. Thompson, Duckwater Shoshone Tribe

C. Marden

T. Kingham, GAO

D. Feehan, GAO

E. Hiruo, Platts Nuclear Publications

J. Birchim, Yomba Shoshone Tribe

C. Meyers, Moapa Paiute Indian Tribe

R. Wilder, Fort Independence Indian Tribe

D. Vega, Bishop Paiute Indian Tribe

J. Egan, Egan, Fitzpatrick & Malsch

J. Leeds, Las Vegas Indian Center

J. C. Saulque, Benton Paiute Indian Tribe

C. Bradley, Kaibab Band of Southern Paiutes

R. Joseph, Lone Pine Paiute-Shoshone Tribe

L. Tom, Paiute Indian Tribes of Utah

E. Smith, Chemehuevi Indian Tribe

D. Buckner, Ely Shoshone Tribe

D. Crawford, Inter-Tribal Council of NV

V. Guzman, Inter-Tribal Council of NV (Chairwoman, Walker River Paiute Tribe)

D. Eddy, Jr., Colorado River Indian Tribes

H. Jackson, Public Citizen

J. Wells, Western Shoshone National Council

I. Zabarte, Western Shoshone National Council

H. Urban, NV Congressional Delegation

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This report highlights a number of Yucca Mountain Project activities of potential interest to NRC staff. The ORs continue to respond to requests from NRC Headquarters staff to provide various documentation and feedback related to Key Technical Issues (KTIs) and their resolution. During this reporting period, the ORs continued to observe activities associated with Yucca Mountain site activities, KTIs, and audits. The ORs also attended various meetings and accompanied NRC staff on visits to Yucca Mountain.

If you have any questions on this report or its enclosures, please call Robert Latta on (702) 794-5048, or Jack Parrott on (702) 794-5047.

Attachment(s): 1. U.S. Nuclear Regulatory Commission On-Site Licensing Representatives' Report, Number OR-03-02 for the Reporting Period of May 1, 2003 Through June 30, 2003
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U.S. NUCLEAR REGULATORY COMMISSION

ON-SITE LICENSING REPRESENTATIVES' REPORT

NUMBER OR-03-03

FOR THE REPORTING PERIOD OF MAY 1, 2003 THROUGH JUNE 30, 2003

/RA/

Robert M. Latta
Sr. On-Site Licensing Representative
High-Level Waste Branch
Division of Waste Management

/RA/

Jack D. Parrott
Sr. On-Site Licensing Representative
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Reviewed and Approved By: **/RA/**

Larry Campbell
Section Chief
Repository Site Section
High-Level Waste Branch
Division of Waste Management

Enclosure

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ON-SITE LICENSING REPRESENTATIVE REPORT
NUMBER OR-03-03

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ACRONYMS AND ABBREVIATIONS

ACRO	TITLE
AECL	Atomic Energy of Canada, Limited
AMR	Analysis Modeling Report
AOI	Audit Observation Inquiry
AP	Administrative Procedure
ATC	Alluvial Tracer Complex
BSC	Bechtel SAIC Company, LLC
CAR	Corrective Action Report
the Center	Center for Nuclear Waste Regulatory Analyses
DOE	U.S. Department Of Energy
DR	Deficiency Report
DWM	Division of Waste Management
ECRB	Enhanced Characterization of the Repository Block
ESF	Exploratory Studies Facility
ES&H	Environmental Safety & Health
EWDP	Early Warning Drilling Program
FY	Fiscal Year
GUT	General Underground Training
HLW	High-Level Waste
KTI	Key Technical Issue
LA	License Application
LP	Line Procedure
MII	Management Improvement Initiative
MOR	Monthly Operating Review
NMSS	Nuclear Materials Safety and Safeguards
NRC	U.S. Nuclear Regulatory Commission

ACRONYMS AND ABBREVIATIONS - continued -

ACRO	TITLE
NUREG	Nuclear Regulatory Guide
OCRWM	Office of Civilian Radioactive Waste Management
OR	On-Site Representative
ORD	Office of Repository Development
OQA	Office of Quality Assurance
QA	Quality Assurance
QARD	Quality Assurance Requirements Description
QSL	Qualified Supplier List
RCD	Root Cause Determinations
RDTME	Repository Design & Thermal Mechanical - KTI
SCWE	Safety Conscious Work Environment
TSPA-LA	Total System Performance Assessment - License Application
TWP	Technical Work Plan
UCCSN	University and Community College System of Nevada
USGS	U. S. Geological Survey
YMP	Yucca Mountain Project

EXECUTIVE SUMMARY

QUALITY ASSURANCE (QA) PROGRAM IMPLEMENTATION

During the April 30, 2003, U.S. Nuclear Regulatory Commission (NRC)/U.S. Department of Energy (DOE) Management Meeting, the NRC identified recurring problems with DOE's implementation of it's Quality Assurance (QA) program, and concerns related to the projects safety culture. As a result of this meeting, NRC requested that DOE provide a written response within 30 days describing their future actions for improvement. On May 29, 2003, DOE provided their response to the NRC in a letter from Margaret Chu, to Martin Virgilio, which described DOE's continued commitment to implement the Management Improvement Initiative (MII) for the Yucca Mountain Project (YMP). Specifically, the letter acknowledged the need to change DOE's focus and improve processes to meet the NRC's licensing requirements. As articulated in the letter, the key areas for improvement are: (1) license application, (2) procedural compliance, (3) corrective action program, (4) safety-conscious work environment, and (5) accountability. DOE's 30-day response letter also identified 13 commitments/goals to the NRC, which are intended to improve overall performance.

The NRC acknowledges that DOE has made significant changes to its management team and that identified process improvements may enhance performance. Nonetheless, significant implementation issues persist in the five areas identified in DOE's letter. DOE management has validated these concerns, and believes that in time, the situation will improve. However, the NRC staff is seeking evidence of incremental progress in the implementation of the QA program in order to gain confidence in the fidelity of data, software, and models supporting the potential license application (LA). Therefore, NRC staff will continue to evaluate the implementation of the corrective actions associated with the MII in order to determine the effectiveness of these activities.

CORRECTIVE ACTION REPORT (CAR) BSC(B)-03-C-107 (DATA MANAGEMENT AND UTILIZATION)

On April 17, 2003, Bechtel SAIC Company, LLC (BSC) issued CAR BSC(B)-03-(C)-107. This CAR, which was self-identified, documented numerous examples of Deficiency Reports (DRs) and CARs related to data used in technical products, which cumulatively represented inadequate implementation of procedural controls and ineffective corrective actions to prevent recurrence. In response to the issues identified in this CAR, the manager of projects promptly initiated actions to confirm the qualification status and application of data within each Analysis Modeling Report (AMR) directly used as input for the Total System Performance Assessment (TSPA) - LA.

Based on the review of the documentation associated with the initial response, the ORs generally determined that appropriate corrective actions had been initiated in response to this CAR. However, the ORs identified a concern related to the protracted length of time to complete the root cause determination (RCD) for CAR BSC(B)-03-(C)-107. Specifically, at the conclusion of this reporting period, the RCD team had not completed their investigation and the anticipated date for providing the RCD to DOE Office of Quality Assurance (OQA) had slipped to the mid August time frame. Although there appeared to be some justification for the delayed completion of this quality affecting activity, it is noted that the timely performance of the RCD is a required action for CARs and that this critical activity must be completed in order to effectively determine the extent of condition. Therefore, pending the completion of the RCD for CAR BSC(B)-03-(C)-107, and the evaluation of the basis for allowing this quality affecting activity to remain open for over four months without resolution, this item is identified as OR Open Item 03-04.

COGEMA TO BE PLACED ON OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM) QUALIFIED SUPPLIER LIST

During this reporting period, the ORs examined the quality affecting activities related to the placement of COGEMA (an international design and construction corporation in uranium mining, conversion and enrichment through spent fuel reprocessing), on OCRWM's Qualified Supplier List (QSL). As currently envisioned by DOE, COGEMA will develop the surface facility mechanical handling system designs for the waste handling buildings associated with the potential high-level waste repository at Yucca Mountain. Accordingly, BSC QA's Procurement Quality is in the process of evaluating COGEMA for compliance with the Quality Assurance Requirements Description (QARD) requirements as stipulated in the contract. Once on the QSL, COGEMA may begin "quality-affecting" work. In order to evaluate the adequacy of these design activities, an audit of COGEMA's implementation of their QA program is currently scheduled for August 2003.

MII COMPLETION STATUS

Based on the ORs reviews of project schedules, less than half of the milestones established in the MII were reported completed on time. It was also determined by the ORs that while a draft set of performance indicators associated with the MII were distributed during the April 30, 2003, NRC/DOE Management Meeting, the projects final set of performance indicators are still under development. Corrective actions related to CAR BSC-01-C-002, which is over two years old, remain behind schedule and the management imposed stand-down on software development, which has been in effect for over two years, remains in place. The ORs also noted that the effective self-identification of deficiencies is an anticipated outcome of the MII. However, current indications are that BSC line identified items represent approximately 32 percent of the total population, which is below the projects established goal of 60 percent.

As of June 30, 2003, the project reported that 28 of the 35 MII action statements (approximately 80 percent) had been confirmed completed. Although progress has been made in addressing corrective actions in the MII, the ORs identified a continuing concern regarding six of the remaining MII actions related to programs that are behind schedule. Specifically, the MII actions to implement a single corrective action program and the efforts to establish a set of new or revised DOE/BSC program procedures are significantly behind schedule. Accordingly, the ORs will continue to monitor the implementation of the MII corrective actions and the development of effective performance indicators.

MONTHLY OPERATING REVIEW

During this reporting period, the ORs attended the DOE Monthly Operating Review (MOR) meetings covering the May and June time frames. Areas addressed during these meetings included detailed discussions concerning project activities; management initiatives; QA program issues; licensing; environmental, safety and health (ES&H)/Site Operations; public affairs; and business administration. Additional topics evaluated during the MOR involved the review of current project issues, discussion of significant accomplishments and the status of MII action items.

During these meetings, both DOE and BSC management emphasized the need to improve performance in the areas related to LA, corrective actions, procedural compliance, accountability, and effective performance indicators. Also, during these meetings the responsible managers for each of the organizations representing project support, licensing, safety analysis, repository facilities, and site operations provided the overall status of their respective programs using the standard industry identifiers of red, yellow and green to characterize overall performance. These presentations typically involved candid evaluations of

problem areas including critical path activities and critiques of performance that focused on accountability and methods for improvement. Additionally, the ORs noted that within each functional area, project management personnel specifically addressed the outstanding DRs and CARs they have responsibility for, and the actions they are taking to resolve these issues. This increased focus and attention on improving performance and enhanced management processes related to quality issues represents an overall improvement in project controls and is identified as a management strength related to the YMP.

SAFETY CONSCIOUS WORK ENVIRONMENT

In conjunction with the MII and the Safety Conscious Work Environment (SCWE) program, the project recently conducted the first in a series of quarterly surveys to assess human performance issues. The purpose of this initiative was to provide a baseline for improvements in the projects SCWE program and to evaluate the effectiveness of SCWE implementation efforts. The survey was sent to 25 percent of YMP employees. Although the survey identified several positive factors, including the determination that the majority of employees understand the importance of SCWE and that employees are aware that they are individually responsible for identifying problems and adverse conditions, several adverse results were also noted. In particular, the survey results indicated that: 1) Fifty-five percent of those surveyed fear retaliation for raising concerns; 2) fifty-five percent don't believe a culture exists that is conducive to raising concerns; 3) sixty percent don't believe that the resolution of safety and quality issues through the corrective action program is effective; and 4) fifty-five percent said management expectations are not reflected in performance reviews, rewards, or discipline.

The results of this survey are currently being evaluated by project management to determine the actions necessary to address these issues such that performance can be monitored in future surveys. In order to trend the results over time the project will continue to administer quarterly surveys. The second survey has been distributed and is due to be collected in mid July. The project also plans to conduct an independent, 100 percent (project-wide), survey of SCWE. This activity is tentatively scheduled for late summer and the results will be compared to the quarterly surveys in order to validate the data.

GENERAL SITE ISSUES

During this reporting period, the standing orders suspending certain electrical work activities and limiting tunnel access past alcove 2 were canceled.

Between February and May, 2003, the project initiated a major work replanning effort related to receiving a smaller Fiscal Year (FY) 2003 budget appropriation than requested. The replanning efforts resulted in the partial closure of the Yucca Mountain site facilities and a deferral of some field tests.

EXPLORATORY STUDIES FACILITY TESTING

The drift-scale thermal test continued its cool-down phase. Monitoring of boreholes in the access observation drift continues. Phase I of a ground support test in the south ramp of the Exploratory Studies Facility (ESF) concluded.

ENHANCED CHARACTERIZATION OF REPOSITORY BLOCK TESTING

Entry beyond the sealed Enhanced Characterization of Repository Block Testing (ECRB) bulkheads at Stations 22+01, 25+03, and 25+99 is scheduled for July 2003.

SURFACE-BASED FIELD TESTING

Drilling on the Nye County Early Warning Drilling Program (EWDP) Phase IV wells resumed. Geotechnical sampling and tests at the Pena Blanca, Mexico, site (natural analog program) concluded, and deep water well drilling in Inyo County, California continued.

LABORATORY STUDIES

During this reporting period, post-migration radiometric analysis on the tuff blocks continued.

UPCOMING NEW TESTS AND STUDIES

Construction of Alcove 10 in the ECRB, and a thermal management dispersion test at the Atlas facility were planned for FY2003. However, new tests and studies planned for FY2003 have been postponed due to the replanning efforts.

REPORT DETAILS

INTRODUCTION

The principal purpose of the On-Site Representatives' (ORs) report is to inform U.S. Nuclear Regulatory Commission (NRC) managers, staff, and contractors of information on the U.S. Department of Energy (DOE) programs in repository design, performance assessment, performance confirmation, and environmental studies that may be useful in fulfilling NRC's role during prelicensing consultation. The primary focus of this and future OR reports will be on DOE's programs for subsurface- and surface-based testing, performance assessment, data management systems, and environmental studies. Relevant information includes new technical data, DOE's plans and schedules, and the status of activities to pursue the License Application (LA). The ORs also take part in activities associated with resolving NRC Key Technical Issues (KTIs). This report covers the period of May 1, 2003, through June 30, 2003.

OBJECTIVES

The ORs mission is to serve principally as a point of prompt information exchange and to identify preliminary concerns with site investigations and potential licensing issues. The ORs carry out this role by gathering and evaluating information, identifying concerns, and raising more significant issues to NRC management's attention. Communication with DOE is accomplished by exchanging information on data, plans, schedules, documents, activities and pending actions, and resolution of issues. The ORs interact with DOE scientists, engineers, and managers, with input from NRC Headquarters management, regarding the implementation of NRC policy, programs, and regulations. The ORs also focus on such issues as quality assurance (QA), design controls, data management systems, performance assessment, and KTI resolution. A primary OR role is to identify areas in site studies, activities, or procedures that may be of interest or concern to the NRC staff.

1 QA AND ENGINEERING

1.1 QA Program Implementation

During the April 30, 2003, NRC/DOE Management Meeting the NRC identified recurring problems with DOE's implementation of it's QA program and concerns related to the projects safety culture. As a result of this meeting the NRC requested that DOE provide a written response within 30 days describing their future actions for improvement. On May 29, 2003, the DOE provided their response to the NRC in a letter from Margaret Chu, to Martin Virgilio, which described DOE's continued commitment to implement the Management Improvement Initiative (MII) for the Yucca Mountain Project (YMP). Specifically, the letter acknowledged the need to change DOE's focus and improve processes to meet the NRC's licensing requirements. DOE's letter also identified recent actions instituted to establish conditions in which the Office of Civilian Radioactive Waste Management (OCRWM) can achieve it's objectives. These actions include, elevation of Project Manager to Deputy Director, a program-wide functional realignment effort, and implementation of improvements in key areas. As articulated in the letter, the key areas for improvement are: (1) license application, (2) procedural compliance, (3) corrective action program, (4) safety-conscious work environment, and (5) accountability.

As a result of DOE's 30-day response letter, the project has identified 13 commitments/goals to the NRC. These commitments/goals are listed below, along with the scheduled completion date.

1. Submit LA that complies with 10 CFR Part 63 in which data, software, and models meet or exceed applicable QA requirements, date December 04
2. Present KTI approach to NRC, date June 03 (closed)
3. Create an effective trend report to monitor procedural compliance, identify causes of non-compliance, and take corrective action as necessary, date September 03
4. Update AP5.1Q to streamline the review and revision process for procedures, date July 03
5. Screen existing procedures for needed improvements, date TBD
6. Single improved Corrective Action Plan implemented, date September 03
7. Goals: Approve 90 percent of corrective actions within 30 days of initiation of DRs and CARs; complete the corrective action for DRs in fewer than 60 days on average; complete corrective actions for DRs in fewer than 60 days on average; complete corrective actions for CARs in fewer than 100 days on average, date September 03
8. Safety Conscious Work Environment (SCWE) surveys will be performed quarterly with results provided to NRC, date to be determined (second survey currently out, results expected in July)
9. Additional SCWE training to managers for increased effectiveness, date to be determined.
10. Conduct external expert annual SCWE surveys, date to be determined.
11. Performance criteria for quality, timeliness, procedural compliance, and safety built into appraisals and evaluations, date to be determined.
12. Demonstrated actions that exceed these expectations will be recognized and failure to meet them will be addressed appropriately, date to be determined.
13. Semi-annual report to employees to highlight successes, communicate lessons learned, and underscore our commitment to accountability, date to be determined.

The NRC acknowledges that DOE has made significant changes to its management team and that identified process improvements may enhance performance. Nonetheless, significant implementation issues persist in the five areas identified in DOE's letter. DOE management has validated these concerns, and believes that in time, the situation will improve. However, the NRC staff is seeking evidence of incremental progress in the implementation of the QA program in order to gain confidence in the fidelity of data, software, and models supporting the potential license application. Therefore, NRC staff will continue to evaluate the implementation of the corrective actions associated with the MII in order to determine the effectiveness of these activities. It is also anticipated that the issues identified in DOE's response letter will be discussed at the next NRC/DOE management meeting scheduled for July 16, 2003.

1.2 Corrective Action Report BSC(B)-03-C-107 (Data Management and Utilization)

As previously documented in OR Report 03-02, dated June 11, 2003, the ORs and representatives from the High-Level Waste Branch (HLWB) observed portions of DOE's Office of Quality Assurance (OQA) Audit OQAP-BSC-03-05 of Bechtel SAIC Company, LLC (BSC), which evaluated the integrity of data associated with the YMP LA. During the audit OQA performed a limited scope evaluation of data sets associated with completed technical products supporting LA.

During the conduct of this audit the ORs and the NRC observers became aware of a potential significant condition adverse to quality, concerning ineffective corrective actions for prior deficiencies related to data used in technical products. Subsequent to the March 27, 2003, post audit conference, the ORs continued to follow this issue and on April 17, 2003, BSC issued Corrective Action Report (CAR) BSC(B)-03-(C)-107. Specifically, this CAR documented numerous examples of DRs and CARs over the past four years, which cumulatively represented inadequate implementation of procedural controls and ineffective corrective actions to prevent recurrence. It is significant to note, that the documented findings that resulted in this CAR were attributed to the line organizations' self-identification process, which represents a positive indication of the project's goal of institutionalizing continuous improvement.

The ORs reviewed the initial response to CAR BSC(B)-03-(C)-107. The initial response included a description of the immediate actions necessary to bring the process under control and the plan for determining the extent of condition. Specifically, in response to this issue, the manager of projects promptly initiated actions to confirm the qualification status and application of data within each Analysis Modeling Report (AMR) directly used as input for the Total System Performance Assessment (TSPA)-LA. This action was confirmed complete based on the issuance of a project memorandum, dated May 12, 2003, defining the charter for data confirmation process. Additionally, a comprehensive data confirmation plan (defining the verification process, implementation schedule and resources), was established and a detailed data confirmation checklist was developed. Based on the review of the documentation associated with the initial response, it was generally determined that appropriate corrective actions had been initiated.

On April 17, 2003, BSC established a root cause determination (RCD) team to evaluate CAR BSC(B)-03-(C)-107. Although no specific date was initially identified for completion of the RCD, the team established a tentative goal of mid to late June to finish their investigation and issue the RCD report. At the conclusion of this reporting period, the ORs requested a briefing on the status of the RCD team. As a result of this briefing, the ORs were advised that the RCD team had not completed their investigation, and that the anticipated date for providing the RCD to DOE OQA, had slipped to the mid August time frame. As described during the briefing, several factors contributed to the delay in completing the RCD, including: 1) The reconstitution of the team in late April; 2) revision of the original RCD charter; 3) replacement of several of the team members; 4) increase in the scope of DRs/CARs reviewed; 5) schedule interruptions due to personnel issues; and 6) the part time participation by team members. Although there appeared to be some justification for the protracted completion of this quality affecting activity, it is noted that the timely performance of the RCD is a required action for CARs, and that this critical activity must be completed in order to effectively determine the extent of condition. Therefore, pending the completion of the RCD for CAR BSC(B)-03-(C)-107, and the evaluation of the basis for allowing this quality affecting activity to remain open for over four months without resolution, this item is identified as **OR Open Item 03-04**.

1.3 COGEMA To Be Placed on Office of Civilian Radioactive Waste Management (OCRWM) Qualified Supplier List

During this reporting period the ORs examined the quality affecting activities related to the placement of COGEMA (an international design and construction corporation in uranium mining, conversion and enrichment through spent fuel reprocessing), on OCRWM's Qualified Supplier List (QSL). As currently envisioned by DOE, COGEMA, will develop the surface facility mechanical handling system designs for the waste handling buildings associated with the potential high-level waste repository at Yucca Mountain. Accordingly, BSC QA's Procurement Quality is in the process of evaluating COGEMA in accordance with AP-7.4Q, "Supplier Evaluation and Qualified Supplier List (QSL) Maintenance".

Subsequent to the BSC affected organization request for a supplier evaluation of COGEMA, BSC Procurement Quality personnel met with the Procurement Formation Team for this contract to discuss the QA program requirements. The contract was awarded with a condition that no "quality-affecting" work could start until COGEMA was placed on the QSL in accordance with line procedure (LP)-4.5Q` "Purchase Requisitions and Procurement Documents." On May 13, 2003, BSC Procurement Quality contacted the COGEMA QA manager to obtain the applicable quality program documents to be used for the contract. The related quality program documents were received and on May 19, 2003, BSC Procurement Quality personnel met with the COGEMA QA manager to discuss the QA program.

At the conclusion of this reporting period, the COGEMA QA program was being evaluated by BSC Procurement Quality for compliance with the QARD requirements as stipulated in the contract. In accordance with the requirements of administrative procedure (AP) 4.5Q, any identified deficiencies in the COGEMA quality program will be identified and appropriately addressed prior to placing COGEMA on the QSL. Once on the QSL, COGEMA may begin "quality-affecting" work. In order to evaluate the adequacy of these design activities, an audit of COGEMA's implementation of their QA program is currently scheduled for August 2003.

1.4 Management Improvement Initiative (MII) Completion Status

There are 29 discrete action statements associated with the five MII Action Plans (six action statements have dual responsibility for a total of 35 discretely monitored activities). Additionally, there are approximately 37 action statements related to CARs BSC-01-C-001 (Models) and BSC-01-C-002 (Software). As of June 30, 2003, the project reported that 28 of the MII action statements (approximately 80 percent) had been confirmed completed. Seven MII actions are currently with the responsible managers for action, and have not been reported complete as of the end of June 2003. These remaining MII actions include four related to procedures, two concerning the corrective action program (CAP), and one involving Safety Conscience Work Environment (SCWE).

As of the end of June 2003, less than half of the milestones established in the MII were reported completed on time. Although a draft set of performance indicators associated with the MII were distributed during the April 30, 2003, NRC/DOE Management Meeting, the projects final set of performance indicators are still under development. The ORs also noted that the effective self-identification of deficiencies is an anticipated outcome of the MII. However, current indications are that line identified items for BSC remained at approximately 32 percent, which is below the project goal of 60 percent.

CAR BSC-01-C-001, which has been open for over two years, has one action with a late closure. At the end of this reporting period, 9 of the 12 actions related to this CAR have been completed and verified by OQA. One action item is in review with the responsible managers and two are currently in the verification and confirmation process. Corrective actions related to CAR BSC-01-C-002, which is over two years old, remain behind schedule. As of the end of June 2003, nine actions have been completed and verified as satisfactory, eight actions have been reported as complete and are undergoing verification. Eight actions are in progress with the responsible manager. The over two year old management imposed stand-down on software development, related to CAR BSC-01-C-002, remains in place with no established date for concluding this administratively controlled process.

Although progress has been made in addressing corrective actions in the MII, the ORs identified a concern regarding six of the remaining MII actions related to programs that are behind schedule. Specifically, the MII actions to implement a single corrective action program by December of 2002, is overdue and the establishment of a set of new or revised DOE/BSC program procedures, targeted for completion by April of 2003, is behind schedule. Accordingly, the ORs will continue to monitor the implementation of the MII corrective actions and the development of effective performance indicators.

1.5 Monthly Operating Review

During this reporting period, the ORs attended the DOE Monthly Operating Review (MOR) meetings covering the May and June time frames. Areas addressed during these meetings included detailed discussions concerning project activities; management initiatives; QA program issues; licensing; environmental, safety and health (ES&H)/Site Operations; public affairs; and business administration. Additional topics evaluated during the MOR involved the review of current project issues, discussion of significant accomplishments and the status of MII action items.

With respect to the performance of oversight activities, the project is now conducting joint DOE/BSC audits. This initiative is intended to eliminate audit duplication and result in improved effectiveness and use of resources. QA is also focused on continued improvements in the corrective action program with the goal of implementing a single corrective program by the end of September. Improvements in the trending process and the timely closure of conditions adverse to quality were also discussed.

During these meetings both, DOE and BSC management emphasized the need to improve performance in the areas related to: LA; corrective actions; procedural compliance; accountability; and effective performance indicators. During these meetings the responsible managers for each of the organizations representing project support, licensing, safety analysis, repository facilities, and site operations, provided the overall status of their respective programs using the standard industry identifiers of red, yellow and green to characterize overall performance. Although the set of primary and secondary indicators related to Work Execution and Management are still under development, the color coding of the activities including trend information appear to be appropriate and the management direction provided in these meetings is to maintain adverse indicators until sustained improvements have been achieved. These presentations typically involved candid evaluations of problem areas including critical path activities and critiques of performance that focus on accountability and methods for improvement. Additionally, the ORs noted that within each functional area, project management personnel specifically addressed the outstanding DRs and CARs that they have responsibility for and the actions they are taking to resolve these issues. This

increased focus and attention on improving performance and enhanced management processes related to quality issues represents an overall improvement in project controls and is identified as a management strength related to the YMP.

1.6 Safety Conscious Work Environment

In conjunction with the MII and the Safety Conscious Work Environment (SCWE) program, the project recently conducted the first in a series of quarterly surveys to assess human performance issues. The purpose of this initiative was to provide a baseline for improvements in the projects SCWE program and to evaluate the effectiveness of SCWE implementation efforts. The survey was conducted using questions typical of those employed in the nuclear industry and was administered to 25 percent of the YMP employees at the end of March 2003. Current plans are to repeat the survey quarterly in order to monitor and trend results over time. As a result of this survey the following trends were identified:

Positive Attributes

- Employees understand the importance of SCWE (more than 90 percent indicated that every aspect of SCWE was important).
- Employees understand that they are responsible for identifying problems and adverse conditions (85 percent agreed).
- Employees indicated that management's expectations regarding SCWE have been clearly communicated (more than 80 percent agreed).

Negative Attributes

- Fifty-five percent of employees surveyed fear retaliation for raising concerns.
- Fifty-five percent don't believe a culture exists that is conducive to raising concerns.
- Sixty percent don't believe that the resolution of safety and quality issues through the corrective action program is effective.
- Fifty-five percent said management expectations are not reflected in performance reviews, rewards, or discipline.

The results of this survey are currently being evaluated by project management to determine the actions necessary to address these issues such that performance can be monitored in future surveys.

Based on information provided at recent project meetings, the ORs determined that senior management continues to stress that the responsibility for the improvement in performance lies with the management team. This emphasis on management involvement was exemplified during a recent meeting that focused on understanding the rational for the SCWE survey results and the need to assess individual behaviors that cause the employees to feel that the corrective action program is ineffective. The ORs also noted that BSC's general manager discussed the results of the initial SCWE survey in his all-hands meetings and that the survey results have been distributed to all project personnel.

As noted above, the project will continue to administer quarterly surveys. The second survey has been distributed and is due to be collected in mid July. At the conclusion of

this reporting period indications were that the response has been better than the initial survey. The project also plans to conduct an independent, 100 percent (project-wide), survey of SCWE. This activity is tentatively scheduled for late summer. The results will be compared to the quarterly surveys in order to validate the data.

1.7 DOE QA Software Audit of Bechtel SAIC Company, LLC

On June 2-13, 2003, Division of Waste Management (DWM) staff participated as observers in the DOE's, Office of Quality Assurance Software Audit at BSC facility in Las Vegas, Nevada, and at two DOE laboratories in California (Lawrence Berkeley and Livermore). The objectives of this performance-based audit were to assess software quality, including the implementation and effectiveness of the software life-cycle processes and activities that are used to manage the acquisition, development, qualification, and use of software supporting the YMP LA.

The DOE audit team identified eight deficiencies in the areas of technical reviews, software classification, design, implementation, testing, operations management, and software control and configuration. Three Audit Observer Inquiries (AOIs) were generated. The DOE audit team concluded that the results of the audit were marginally effective and that the essential software-life-cycle elements of design, implementation, and testing were not effective, or indeterminate. Based on the DOE team conclusion and on the limited sample size for products processed under the newly developed DOE procedures, the NRC observation team concluded that the results of the audit were indeterminate. Although the OQA audit team determined that overall the software implementation process was marginally acceptable, it was noted that the need for a follow-up audit was acknowledged by OQA. Accordingly, the ORs will monitor the performance of this software audit and report the results in a future report.

1.8 Review of Audit Observation Inquiries

As previously documented in Report Number OR-02-06, dated January 23, 2003, the ORs observed the conduct of DOE's OQA audit YMSCO-ARC-02-12 of the Office of Repository Development (ORD). The purpose of this audit was to evaluate the effectiveness of the QA program implementation and to review the status of previously identified deficiency documents to determine the adequacy of completed corrective actions. During the performance of this audit, the ORs identified and generated an AOI YMSCO-ARC-02-012-01, regarding the need for OQA to ensure the procedure development and review process, includes a documented evaluation to verify compliance with the requirements of the projects Quality Assurance Requirements Description (QARD).

During this reporting period, DOE provided additional information related to this AOI in their letter from J. Ziegler, to the NRC's J. Schlueter, dated June 18, 2003. Based on the review of this letter, the ORs determined that revised criteria for DOE's contractor had been established regarding the procedure development and review process. Specifically, Technical Direction Letter 03-17, dated April 17, 2003, states that:

- The designated DOE line organization responsible for technical oversight of the work to be performed will concur with the BSC Line Procedures that implement QARD requirements.
- The BSC QA organization will review and document concurrence with all BSC procedures that implement QARD requirements.

- DOE QA will review and document concurrence with all DOE procedures that implement QARD requirements.

Additionally, the ORs determined that OQA and BSC QA routinely incorporate the review of pertinent procedures in the audit checklists during the conduct oversight activities to verify compliance with the requirements of the QARD. Therefore, based on discussions with OQA personnel and the review of DOE's June 17, 2003, letter to the NRC, it was determined that appropriate actions had been initiated to resolve this issue. Accordingly, **AOI YMSCO-ARC-02-012-01**, is considered closed.

2. OUTREACH ACTIVITIES

2.1 High-Level Waste Public Outreach Meetings in California

On June 3, 2003, in response to a request from Inyo County California officials, NRC staff from the High-Level Waste Branch briefed the Inyo County Supervisors at a regularly scheduled board meeting held in Independence, California, and conducted a public outreach meeting in Tecopa, California, during the evening of June 4, 2003. The staff, along with the ORs, provided an overview of NRC's role in the potential licensing of the geologic repository at Yucca Mountain, with specific presentations on associated ground-water, transportation, and security issues. Attendees at the June 4, 2003, meeting included residents of Tecopa and neighboring Nevada towns; and representatives of the Western Shoshone Tribe; various citizens' groups; Inyo County; and the media. At the request of Nye County, Nevada, NRC staff met with Nye County Commissioners on June 5, 2003, to discuss issues of mutual interest, such as spent fuel cask integrity, associated transportation issues, NRC's role in the licensing process, and ongoing interactions with the Department of Energy. The presentations were well received and many of the attendees expressed their appreciation to the NRC staff for supporting community based outreach activities.

3 FIELD AND LABORATORY TESTING

3.1 General Issues

Electrical Work Safety Stand-down

On January 9, 2003, a standing order was issued by the Site Operations Project Manager giving notice of a safety stand-down for all electrical work at the Yucca Mountain site. The stand-down was related to safety and quality concerns. During this reporting period, the stand-down was canceled as new electricians completed an enhanced worker qualification program.

Limited Access to Underground Areas

During the last reporting period, it was determined that an underground fire hazard analysis for the main tunnel of the Exploratory Studies Facility (ESF) did not address safety recommendations made 4 to 5 years ago during development of the analysis. After the concern was validated, measures were put in place to limit tunnel access for individuals and groups (for instance, on tours), that did not have General Underground Training (GUT). During this reporting period the underground fire hazard analysis issues have been resolved. And the standing order limiting tours for anyone without GUT from going further into the ESF than Alcove 2 has been canceled.

3.2 Scientific Investigations

The DOE continues to conduct scientific and engineering investigations, or tests, to understand Yucca Mountain's geology, chemistry, hydrology, and other physical aspects and processes that could affect a potential repository's safety, and to provide input to a potential repository's design. DOE can use the results of this work to help form a safety and licensing basis for a potential repository.

Most of DOE's active scientific and engineering investigations are being done through their contracts with the national laboratories and the U.S. Geological Survey (USGS). Table 2 is a list of these currently active or recently completed tests. Included in the list is the reference number of the plan for, and status of, each test at the end of the reporting period. Completed or canceled tests where the test plan is to be decontrolled are marked with "strikeout" text and will be removed from the Table for the next reporting period. Newly approved test plans are in bold text.

DOE also supports some scientific investigations through funding of Yucca Mountain Project oversight to Nye County, Nevada and Inyo County, California. Under this program, these counties conduct independent scientific investigation programs. These are described under Section 3.5 "Surface Based Field Testing" below.

In addition, the University and Community College System of Nevada (UCCSN) has a cooperative agreement with the DOE's Office of Repository Development to participate in scientific and engineering studies of the Yucca Mountain repository site. A listing of all current and closed UCCSN scientific investigations can be found at: http://hrcweb.nevada.edu/qa/sip.htm.

DOE also contracts with Atomic Energy of Canada, Limited (AECL) for scientific investigation of potential repository issues. AECL is currently working on three studies under the DOE QA program. They are: 1) radionuclide transport through tuff samples from Busted Butte; 2) crevice corrosion in titanium, Alloy 22, and stainless steel; and 3) neutron diffraction based measurements of strain in Alloy 22 test specimens.

The status of selected YMP tests are described below.

3.3 Exploratory Studies Facility (ESF) Testing

The excavation of the ESF main drift, completed in 1997, allows the collection of scientific and engineering data at Yucca Mountain. DOE continues testing in the ESF main drift to supply data to support DOE's ongoing scientific studies. Figure 1 shows the ESF test locations. Ongoing ESF testing activities are summarized below.

Alcove 5 (Drift-Scale Test)

In accordance with the established DOE test plan, power to the heated drift was turned off in mid-January 2002, and the 4-year cool-down of the facility is being monitored. At turn off the surface temperature of Canister 1 was 201.1 °C (394 °F), the temperature of the rock was 201.1 °C (394 °F), and the temperature of the air was 204.4 °C (400 °F). As of the end of this reporting period, the surface temperature of Canister 1 was 83.3 °C (182 °F), the temperature of rock was 84.4 °C (184 °F), and the temperature of the air was 87.8 °C (190 °F). DOE is performing periodic visual and video inspection, water sampling, gas sampling, neutron logging, and electrical-resistance tomography. The data from this test have primarily been used as input to the Thermal Measurements AMR.

Drilling on two additional chemistry boreholes in the access observation drift began during the last reporting period, and one of those boreholes was completed. During this reporting period, problems developed with the drill rig coring the second borehole. Because this problem could not be resolved before site operations were reduced due to the replanning efforts, the second borehole was not completed and the drill rig was demobilized.

South Ramp

Site work for Phase I of a ground support test in the south ramp of the ESF began during this reporting period. This test is looking at issues related to the use of rock bolts in the drifts of the proposed repository. Eight rock bolts were installed and grouted. During the last reporting period the non-heated rock bolts were pull tested. During this reporting period, the remaining four rock bolts were heated to 100°C and pull tested. Preliminary results indicate that there was no grout failure during the tests.

3.4 Enhanced Characterization of the Repository Block (ECRB) Testing

The excavation of the ECRB cross drift, completed in October 1998, allows the collection of scientific and engineering data in stratigraphic units that constitute the bulk of the potential repository horizon. DOE continues ECRB testing to supply data to support DOE's ongoing scientific studies. Figure 1 describes the ECRB test locations. ECRB testing activities are summarized below.

Sealed Portion of the ECRB Cross-drift

In an ongoing effort to monitor moisture conditions in the sealed portions of the ECRB, the ECRB bulkheads from Station 22+01 and beyond were closed on November 14, 2001. The bulkhead at Station 17+63 was closed on December 20, 2001. Before the closure of those bulkheads, project personnel installed enhanced monitoring and collection equipment, including remote cameras and moisture-collection devices, in accordance with the revised test plan. Plastic sheets and drip cloths infused with a pH-sensitive chemical were installed near the crown of the tunnel, and numerous sample bottles were placed to collect possible drips from rock bolts.

DOE reopened the bulkhead at Station 17+63, on June 24, 2002. The main purpose for this entry was to take geotechnical rock property samples and to do a slot test in the lower lithophysal zone between Stations 17+63 and 22+01. The bulkhead at Station 17+63 will be resealed after completion of the sampling and other activities in the ECRB.

An unscheduled entry past the bulkhead at 22+01 was made in January 2003 in response to smoke detected behind the bulkhead (see OR report OR-03-01). Related to the smoke event, and in an effort to remove all heat sources behind the bulkhead, external power to the instrumentation located behind the bulkhead was turned off in February 2003.

DOE plans an unventilated entry past the sealed bulkheads at 22+01, 25+03, and 25+99, the first week in July 2003. The purpose of this entry is to make observations and begin planning to replace the external power sources for the instrumentation with batteries. An OR is planning to tour the ECRB past the bulkhead at 22+01 during that time. The change in instrumentation power will occur during a ventilated entry planned for August 2003.

3.5 Surface-Based Field Testing

Nye County EWDP

The Early Warning Drilling Program (EWDP) was initiated as part of the Nye County Nuclear Waste Repository Project Office Yucca Mountain Oversight program. The purpose of the EWDP is to establish a groundwater monitoring system to protect the residents of Nye County in Amargosa and Pahrump Valleys against potential radionuclide contamination.

The program is also intended to provide geologic and hydrologic information to DOE's Yucca Mountain program. The targeted area is located in the hydrogeologic system south of Yucca Mountain. The questions planned to be investigated are: 1) the origin of spring deposits; 2) the geology and hydraulic properties of valley-floor sediments; 3) the recharge; and 4) groundwater-flow patterns.

EWDP Phase IV Status

EWDP Phase IV began the week of October 20, 2002, with the abandonment of wells EWDP-5S and -2D. New wells EWDP-16P, EWDP-27P, and EWDP-28P were drilled and completed from October 2002 to January 2003. Drilling on two additional Phase IV wells (EWDP-24P and EWDP-29P) is scheduled to begin in early-July 2003. During this reporting period water was sampled from well EWDP-22S (a Phase III well). Detailed information on these wells (when available) and updates to the status of the Phase IV drilling project can be found at: http://www.nyecounty.com/ewdpmain.htm.

Alluvial Tracer Complex

The Alluvial Tracer Complex (ATC) is a joint Nye County and DOE Cooperative Testing Program to investigate flow and transport properties of the saturated alluvium, using wells drilled as part of the EWDP. These tracer tests were on hold because the State Engineer would not renew requested permit waivers for the cross-hole test tracers. During this reporting period the ATC testing program was deferred and the testing equipment was removed and returned to within the Nevada Test Site Area 25.

Inyo County Well Drilling

In early April 2003, Inyo County, California, began drilling the first of five deep monitoring wells in the county, as part of its Yucca Mountain oversight program. The county's rationale for drilling these new wells is to: 1) evaluate regional groundwater flow through the southern Funeral Mountains; 2) establish structural controls on flow paths and discharge areas; and 3) evaluate potential zones of mixing between the deep regional groundwater systems and the local shallow groundwater systems to the northeast. During this reporting period, the first of these new wells (Travertine #2) was drilled to a depth of 409 meters (1341 feet) and the well was completed and pump tested, and the USGS collected water samples. This well is located south of Yucca Mountain, in Death Valley National Park. Drilling of additional wells in Inyo County is planned for later in this year.

Pena Blanca (Natural Analog Program)

Drilling commenced in mid-March 2003. During this reporting period the last two of planned four exploratory wells were drilled and cored, and that work was concluded. The four wells were completed to just below the water table as test wells for water sampling.

3.6 Laboratory Studies

Laboratory Study of Radionuclide Transport in Non-Welded Tuff

During this reporting period data from the post-migration radiometric analysis on the unsaturated tuff block was obtained at AECL Laboratories. Preliminary results indicate that there may be a change in lithology within the analyzed tuff block or that chemically reducing activity is occurring in the block.

3.7 Upcoming New Tests and Studies

Due to DOE's replanning efforts, all new tests and studies have been deferred indefinitely.

4.0 GENERAL ACTIVITIES

4.1 Meetings

NRC and DOE Hold Technical Exchange on Repository Design and Thermal-Mechanical Effects Key Technical Issue

On May 6-8, 2003, NRC staff, including the ORs and its contractor, the Center for Nuclear Waste Regulatory Analyses (the Center) met with the DOE and its contractors, in Las Vegas, Nevada, to discuss DOE's approach to resolving the Repository Design and Thermal-Mechanical (RDMTE) KTI. The objectives of this meeting were to review and discuss the adequacy of: (1) geological characterization; (2) rock properties testing; and (3) modeling work conducted in the past year aimed at resolution of RDTME KTI Agreement items. NRC provided feedback on DOE's resolution strategy and adequacy of data and modeling conducted thus far. The path forward on remaining information needed before license application submittal was also discussed. Closing out the meeting, a crosswalk of agreement items to other key technical issues was also presented.

At the end of the meeting, NRC staff made a number of observations, which are documented in detailed minutes of the meeting. The staff noted that DOE's strategy for resolving the geomechanics-related issues is a coherent response to RDTME's questions, on rock properties and rock behavior, which have been discussed for the last 10 years. In addition to providing feedback on DOE's approach to its drift degradation analysis, NRC staff agreed to make available to DOE its own independent drift degradation analysis, just completed by the Center, as soon as the staff review of the contractor report is completed. In response to NRC staff questions, DOE confirmed that the results of the latest drift degradation analyses will be used to re-examine the screening decisions for the rockfall and drift collapse scenarios and their potential impacts on the engineered barrier system and the long-term performance of the repository. Representatives of the State of Nevada, Nevada Nuclear Waste Task Force, and Clark County were also present at the meeting, and their comments on the issues were also documented.

NRC and DOE Hold Technical Exchange and Management Meeting

On May 15, 2003, Office of Nuclear Material Safety and Safeguards staff met in a public forum with DOE staff to discuss the use of risk information to address KTI agreements concerning the DOE YMP. The meeting was held via three-way video-conferencing hosted at NRC Headquarters, with connections to the Yucca Mountain Repository

Development Office in Las Vegas, Nevada, and the Center in San Antonio, Texas. Various stakeholders, including representatives from the State of Nevada, Clark County, and the Electric Power Research Institute attended at the NRC location. Presentations included overviews of: (1) the DOE approach to address KTI agreements using risk information; (2) NRC staff perspective on risk-informed issue resolution; and (3) NRC staff perspective on the combined effects of uncertainty.

Staff Attends Meeting of Nevada Commission on Nuclear Projects

On June 2, 2003, the ORs attended a public meeting of the Nevada Commission on Nuclear Projects held in Las Vegas, Nevada. During this quarterly meeting, the staff of the Nevada Commission on Nuclear Projects provides an update on its activities to the Commission. Topics covered included a review of the State's legal actions against DOE, the Environmental Protection Agency, and NRC; a review of the State's comments on the Spent Fuel Project Office's proposed package performance study; and an update on the status of the State's sponsored technical research and technical review of repository issues. Representatives from the affected units of government and the public were also invited to provide updates and comments.

High-Level-Waste Technical Exchange Meeting Between NRC and DOE on Container Life and Source-Term Waste Package Design

On June 4-5, 2003, staff from the Division of Waste Management and the Center attended a Technical Exchange meeting with the DOE Yucca Mountain Staff, in Las Vegas, Nevada. This public meeting included representatives from DOE, NRC, the Center, the National Waste Technical Review Board, and the State of Nevada. DOE presented information on the proposed design for the waste package and drip shield, application of the American Society of Mechanical Engineer's code for waste package fabrication and testing, and how the new designs affect 10 separate KTIs. NRC shared specific concerns addressing the designs and methodology for the waste package and drip shield, as they pertain to both pre-closure and post-closure issues. DOE responded to several NRC concerns and indicated that additional information would be provided to address the remaining issues. In addition, DOE presented information on effects of seismicity as they relate to the waste package and drip shield. The meeting provided beneficial information and highlighted the value of future NRC/DOE interactions on topics relevant to waste package and drip-shield design.

4.2 Site Visits

On June 19, 2003, an OR went to the DOE-Nevada Test Site operations offices in Las Vegas, Nevada, to complete a physical needed for respirator use. Upon completion and passing of the physical, the OR went to the site to be fitted with the various respirators needed for underground access in certain areas. This activity was done in preparation for a planned July 2003 unventilated entry behind the seepage testing bulkheads in the ECRB.

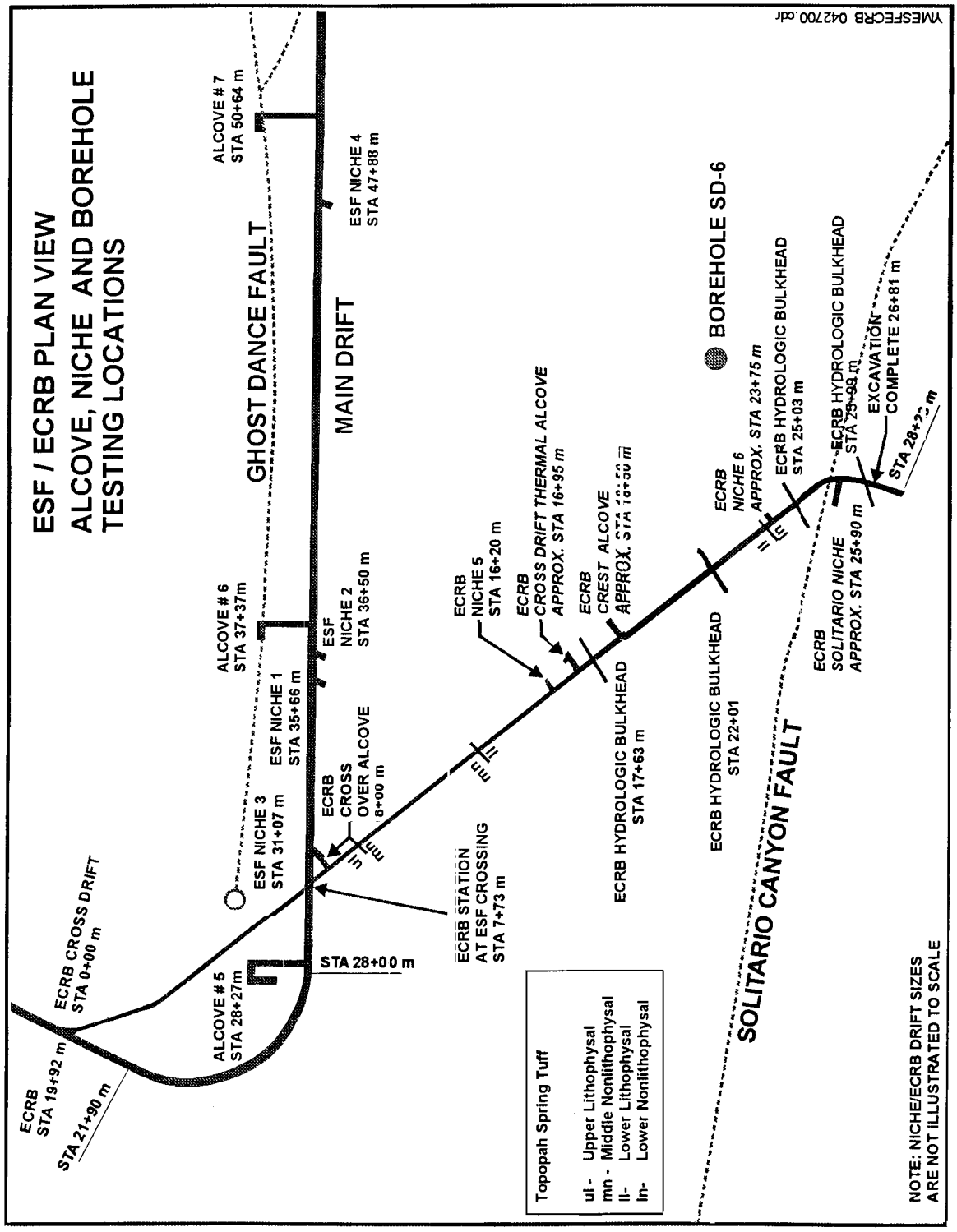
ESF / ECRB PLAN VIEW
ALCOVE, NICHE AND BOREHOLE
TESTING LOCATIONS
GHOST DANCE FAULT
MAIN DRIFT
ECRB CROSS DRIFT STA 0+00 m
ECRB STA 19+92 m
STA 21+90 m
ALCOVE # 5 STA 28+27m
STA 28+00 m
ALCOVE # 6 STA 37+37m
ESF NICHE 3 STA 31+07 m
ESF NICHE 1 STA 35+66 m
ESF NICHE 2 STA 36+50 m
ECRB CROSS OVER ALCOVE 8+00 m
ALCOVE # 7 STA 50+64 m
ESF NICHE 4 STA 47+88 m
ECRB STATION AT ESF CROSSING STA 7+73 m
ECRB NICHE 5 STA 16+20 m
ECRB CROSS DRIFT THERMAL ALCOVE APPROX. STA 16+95 m
ECRB CREST ALCOVE APPROX. STA 16+50 m
ECRB HYDROLOGIC BULKHEAD STA 17+63 m
ECRB HYDROLOGIC BULKHEAD STA 22+01
BOREHOLE SD-6
ECRB NICHE 6 APPROX. STA 23+75 m
ECRB HYDROLOGIC BULKHEAD STA 25+03 m
ECRB HYDROLOGIC BULKHEAD STA 25+90 m
ECRB SOLITARIO NICHE APPROX. STA 25+90 m
EXCAVATION COMPLETE 26+81 m
STA 28+00 m
SOLITARIO CANYON FAULT
Topopah Spring Tuff
ul - Upper Lithophysal
mn - Middle Nonlithophysal
ll- Lower Lithophysal
ln- Lower Nonlithophysal
NOTE: NICHE/ECRB DRIFT SIZES ARE NOT ILLUSTRATED TO SCALE
YMESFECRB 042700.cdr

Figure 1

U.S. NRC On-Site Licensing Representatives' Tracking Report for Open items Followed in Bi-Monthly OR Report

TABLE 1

(For NRC tracking only) AOI-YMSCO-ARC-02-12-01	Identifies the need for DOE OQA to ensure that procedure development and review process includes a documented evaluation to verify compliance with the requirements of the projects QARD	OR Report No. OR-03-01	Date Item Closed: **OR Report No.: OR-03-03** **August ?, 2003**
OR Open Item 03-04	With a tentative date of mid June to evaluate CAR BSC(B)-03-(C)-107, the RCD has not timely performed action to this CAR, it has remained open for four months without resolution.	OR Report OR-03-03	Date Item Closed:
OR Open Item 03-03	An evaluation in DOE's progress in implementing corrective actions associated with CAR BSC-01-C-001, concerning model validation -the OR reviewed TWPs (approx. 43 models). Based on the results, it could not be established if the evaluation criteria will result in the development of models with adequate confidence for LA.	OR Report No. OR-03-02	Date Item Closed:
OR Open Item 03-02	During a review of the MII confirmation packages, it was identified that the action statement execution task descriptions and completion schedules for many of the reviewed pkgs., had been modified without appropriate justification. Therefore, pending the resolution of this apparent deviation from a commitment to administer the MII in accordance with the requirements of AP-5.1Q, this issue is identified as this OR Open Item.	OR Report No. OR-03-02	Date Item Closed:
OR Open Item 03-01	This Open Item is based on issues on separate DRs: 1) the effective resolution of concerns related to inadequate personnel training; 2) the failure to establish an effective transition plan; and 3) the evaluation of the SCWE issues.	OR Report No.: OR-03-01	Date Item Closed:
OR Open Item 02-13	The current status of corrective & preventive actions associated w/CAR #BSC-02-C-01 revealed that not all corrective actions stated had been complete.	OR Report No: OR-02-05	Date Item Closed:
OR Open Item 02-12	Contrary to requirements of the QARD Supplement III 2.4.Cprocedure AP-SIII.2Q inappropriately allows for the use of unqualified data - BSCQA procedure change control program failed to identify this issue.	OR Report No: OR-02-05	Date Item Closed:
OR Open Item 02-11	Based on surveillance not identifying specific problems w/Soft-ware functionality for codes tested, 7 including NUFT did not pass ITP and/or VTP surveillance.	OR Report No: OR-02-05	Date Item Closed:
OR Open Item 02-10	Pending appropriate evaluation & documentation of the design control attributes associated with requirements of 10CFR §63.44 and Part 21	OR Report No: OR-02-04	Date Item Closed:

U.S. NRC On-Site Licensing Representatives' Tracking Report for Open items Followed in Bi-Monthly OR Report

TABLE 1

OR Open Item 02-09	Pending revision of engineering procedures, to include appropriate design verification considerations.	OR Report No: OR-02-04	Date Item Closed:
OR Open Item 02-08	The required performance of annual audits' justification for delaying a scheduled audit of YMSCO for 3-months with an additional extension does not appear to be adequately supported. - Deviation from requirement of Sub-section 18.2.1 E of the QARD.	OR Report No: OR-02-04	Date Item Closed: **OR Report No.: OR-02-06 January 23, 2003**
OR Open Item 02-07	Model Validation Impact Assessment - addressed the effect of inappropriately validated models on TSPA-SR. Many cases of impact assessments used TSPA-SR results to evaluate the local impacts. It's unclear how this practice evaluated the cumulative impact of all the models in question.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-06	Unqualified Data Impact Assessment - NRC staff identified unqualified data that could be replaced with qualified data for the performance assessment. For risk-significant components, an evaluation of unqualified data that is replaced with qualified data would help determine if efforts should be under-taken to qualify the removed data.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-05	Provisions are in place that allow for model validation to continue past issuance of the documentation. The models used in the performance assessment should have adequate support for their representation at the time the performance assessment documentation is issued.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-04	Number of criteria have been developed related to various forms of review. If a review is relied upon for model validation, it should be directed at validating the model and it should encompass the full body of information to the extent practical.	OR Report No: OR-02-01	Date Item Closed: **OR Report No.: OR-03-01 April 14, 2003**

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U.S. NRC On-Site Licensing Representatives' Tracking Report for Open items Followed in Bi-Monthly OR Report

TABLE 1

OR Open Item 02-03	More objective criteria (comparison to data not used in the development of the model) typically results in higher confidence in model validation are not distinguished from the more subjective, problematic criteria.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-02	Current process controls specify that one or more of 9-criteria may be utilized to validate a model. All of the criteria should in-crease confidence in the modeling process, some criteria do not appear to be appropriate for addressing whether the model is valid for its intended use.	OR Report No: OR-02-01	Date Item Closed: **OR Report No.: OR-03-01** **April 14, 2003**
OR Open Item 02-01	Failure to properly include the specific issues identified in the Concerns Program Final Report in the resolution process may result in not adequately addressing the original employees concern.	OR Report No: OR-02-01	Date Item Closed: **OR Report No.: OR-02-06** **January 23, 2003**

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CURRENT TEST ACTIVITIES BY SCIENTIFIC INVESTIGATION TEST PLAN

Table 2

Test Plan Title	Test Plan Identifier	Test Plan Status
Ash Redistribution Studies and Field Studies of Lava Morphology & Igneous Processes	SITP-02-DE-001	Test ongoing
Bench Scale Vapor Dispersion Test Plan	**SITP-03-EBS-001**	**New SITP**
Construction Monitoring Equipment Installation and Data Collection	**SITP-03-EBS-002**	**New SITP**
~~Atlas Ventilation Test - Phase 3~~	~~SITP-02-EBS-001~~	Test complete, decontrolled
Atlas Natural Convection Test	SITP-02-EBS-002	Field testing complete, reports in process
Field Thermal Conductivity Testing	SITP-02-EBS-003	Test ongoing
Reactive Transport Column Experiments	SITP-02-EBS-004	Laboratory tests complete, report in process
Atlas Breached Waste Package and Drip Shield Experiments	SITP-02-EBS-005	Testing complete, report at Rev 00c
Laboratory Thermal Conductivity Testing	SITP-02-EBS-006	Testing complete, report at Rev 00b
TSW Fracture and Lithophysal Studies	SITP-02-ISM-001	Test ongoing
Geologic Mapping of Southern Expansion and Jet Ridge	SITP-02-ISM-002	Complete in 2003
Natural Analogs	SITP-02-NA-001	Test ongoing
Rock Modules Testing	SITP-02-SSD-001	Test complete, report being prepared for Rev 00a
Mechanical Properties Laboratory Investigations	SITP-02-SSD-002	Test ongoing
Ground Support Testing	SITP-02-SSD-003	Test ongoing, field testing shortened due to budget constraints
Lithostratigraphic Studies in Cooperation with Nye County Co. EWDP	SITP-02-SZ-001	Test ongoing
Hydrologic/Hydrochemistry Studies in Cooperation with Nye Co. EWDP	SITP-02-SZ-002	Test ongoing
Alluvial Testing Complex- Single-well, Multi-well, and Laboratory Studies	SITP-02-SZ-003	Test deferred
Inyo County Borehole sampling	Using Test plans SITP-02-SZ-001 & SITP-02-SZ-002	Test ongoing
Laboratory Sorption Measurements- SZ	SITP-02-SZ-004	Test Report due 2003
Moisture Monitoring in the ECRB Bulkhead Cross Drift	SITP-02-UZ-001	Test ongoing

Test Plan Title	Test Plan Identifier	Test Plan Status
Niche 5 Seepage Testing	SITP-02-UZ-002	Testing complete, SITP to be decontrolled
Alcove 8 Flow & Seepage Testing	SITP-02-UZ-003	Test ongoing
Systematic Hydrologic Characterization	SITP-02-UZ-004	Test ongoing thru 2003
36Cl Validation	SITP-02-UZ-005	Field testing complete report ongoing
Busted Butte Transport Testing	SITP-02-UZ-006	Testing complete, SITP to be decontrolled
UZ Hydrochemistry Investigation	SITP-02-UZ-007	Test still active but may deferred to 2004/2005
Fluid Inclusion Studies	SITP-02-UZ-009	Test still active but may deferred to 2004/ 2005
Moisture Monitoring Investigation and Alcove 7 Studies	SITP-02-UZ-010	Test ongoing
Laboratory Sorption Investigation-UZ and SZ	SITP-02-UZ-011	Test still active but deferred
Drift Scale Test	SITP-02-UZ-012	Test ongoing
Laboratory Flow/Coupled Process Block Experiments	**SITP-02-UZ-013**	**New SITP**
~~Cross Drift Thermal Test~~	~~SITP-02-UZ-014~~	Test canceled SITP to be decontrolled
Niche 4 Seepage Testing	SITP-02-UZ-015	Test complete, SITP to be decontrolled
Commercial Spent Fuel and Fuel Rod Segment Degradation and Radionuclide Release in Long Term Tests	SITP-02-WF-001	Test ongoing
DHLW Degradation and Radionuclide Release in Long-Term Tests	SITP-02-WF-002	Test ongoing
Waste Form Colloids Characterization and Concentration Studies	SITP-02-WF-003	Test ongoing
Validation of Dissolved Radionuclide Concentration	SITP-02-WF-004	Test ongoing
CSNF Oxidation Testing	SITP-02-WF-006	Test ongoing
CSNF Flow-Through Dissolution Testing	SITP-02-WF-007	Test ongoing
CSNF Colloid Release Testing	SITP-02-WF-008	Test ongoing
PNNL Dissolved Concentration Validation Testing	SITP-02-WF-009	Test ongoing
Waste Package and Drip Shield Materials Testing	SITP-02-WP-001	Test ongoing
Waste Package Environment Investigations – Dust Geochemistry	SITP-02-WP-008	Test ongoing
Microclimate Records in Fracture Minerals	SITP-03-UZ-016	Test deferred